Patent Claims

1. A bearing ring (2, 21) of a wheel bearing unit (1), which bearing ring is cold-formed in one part and in this case

- is designed hollow-cylindrically about an axis of rotation (1a, 21a) of the wheel bearing unit (1),
- has at least two raceways (10, 11) for rolling bodies (5),
- is provided at least with a flange (18, 22) emanating radially with respect to the axis of rotation (1a, 21a),
- has a rim (2a, 23), the rim (2a, 23) running axially about the axis of rotation (1a, 21a) between the raceways (10, 11) and projecting radially out of the bearing ring (2, 21) between the raceways (10, 11), and
- has an annular groove (16, 26), the annular groove (16, 26) adjoining the rim (2a, 23) radially on a circumferential side of the bearing ring (2, 21) which faces away from the raceways (10, 11), and the annular groove (16, 26) extending, radially codirectionally with the rim (2a, 23), at least partially radially into the bearing ring (2, 21).

2. The bearing ring as claimed in claim 1, which is contracted radially inward in the direction of the axis of

rotation (1a, 21a) with respect to the rim (2a, 23).

3. The bearing ring as claimed in claim 1, in which the rim (2a, 23), starting from a radially lowest point in the annular groove (16, 26), is radially thicker than the initial material of uniform thickness.

4. The bearing ring as claimed in claim 1, which merges axially on both sides of the rim (2a, 23) into hollow-cylindrical portions (20, 24, 25), in each case one of the portions (24, 25) adjoining one of the raceways (10, 11) in each case on both sides of the rim (2a, 23).

5. The bearing ring as claimed in claim 4, in which the rim (2a, 23), starting from a radially lowest point in the annular groove (16, 26), is radially thicker than the radially greatest wall thicknesses of the portions (20, 24, 25).

6. The bearing ring as claimed in claim 1, in which the rim (2a, 23) has between the raceways (10, 11) a cylindrical outer surface area (17, 23a) pointing in the radial direction.

7. The bearing ring as claimed in claim 6, which merges axially on both sides of the rim (2a, 23) into hollow-cylindrical portions (20, 24, 25), in each case one of the portions (24, 25) adjoining in each case one of the raceways (10, 11) on both sides of the rim (2a, 23), and the radially greatest wall thicknesses of the portions (20, 24, 25) being lower than the smallest radial distance between the

cylindrical outer surface area (17, 23a) and a radially lowest point in the annular groove (16, 26).

8. The bearing ring as claimed in claim 1, in which the rim (2a, 23) has in each case a shoulder for each of the raceways (10, 11).

9. The bearing ring as claimed in claim 8, in which the raceways (10, 11) are formed at least partially on the rim (2a, 23).

10. The bearing ring as claimed in claim 8, in which the rim (2a, 23) projects out of the bearing ring (2, 21) radially beyond the raceways (10, 11).

11. The bearing ring as claimed in claim 10, with imaginary contact lines which run through the raceways (10, 11) and which at least partially penetrate an imaginary plane pierced perpendicularly by the axis of rotation (1a, 21a), the contact lines being inclined at an acute pressure angle to the plane, and in this case the plane running through the annular groove (16, 26).

12. The bearing ring as claimed in claim 11, which merges axially on both sides of the rim (2a, 23) into hollow-cylindrical portions (20, 24, 25) and, in this case, in each case one of the portions (24, 25) adjoining in each case one of the raceways (10, 11) on both sides of the rim (2a, 23), and the lowest wall thickness of the rim (2a, 23) being greater in the direction of the contact lines than the radially greatest wall thicknesses of the portions (24, 25).

13. The bearing ring as claimed in claim 10 or 12, in which the contact lines penetrate the annular groove (16, 26).

14. The bearing ring as claimed in claim 1 or 8, which has at the thickest point, between the annular groove (16, 26) and at least one of the raceways (10, 11), at least an equal thickness to that of the initial material of uniform thickness.

15. The bearing ring as claimed in claim 1 or 8, which has on at least one hollow-cylindrical portion (20, 25) a radial wall thickness which is lower than that of the initial material of uniform thickness.

16. The bearing ring as claimed in claim 1, which has a flange (18, 22) produced radially in one part with the bearing ring (2, 21) and angled radially outward, the flange (18, 22) being provided with flange holes (18a, 30) arranged so as to be distributed about the axis of rotation (1a, 21a).

17. The bearing ring as claimed in claim 16, in which the flange (22) has an annular planar surface (28) and a projection (29) projecting axially from the flange (22) beyond the planar surface (28) and running around the axis of rotation (1a, 21a).

18. The bearing ring as claimed in claim 17, in which the projection (29) runs radially between the planar surface (28) and the flange holes (30).

19. A wheel bearing (1) with a bearing ring (2) as

claimed in claim 1, with two rows of rolling bodies (5), in each case one of the rows being in rolling contact with one of the raceways (10, 11), the wheel bearing unit (1), further, with at least one supporting ring (4), the supporting ring (4) being arranged concentrically to the bearing ring (2) and being in rolling contact with at least one of the rows of rolling bodies (5).

20. The wheel bearing unit (1) as claimed in claim 19, with a flanged ring (3) on which the supporting ring (4) is seated concentrically, the flanged ring (3) having at least one connecting flange (3b) spaced apart axially from the flange (18) and radially codirectional with the flange (18).

21. The wheel bearing unit as claimed in claim 20, which has in the flanged ring (3) a raceway, further to the raceways (10, 11), for rolling contact with one of the rows of rolling bodies (5).

22. The wheel bearing unit as claimed in claim 21, in which the supporting ring (4) is held axially on the flanged ring (3) by means of a crimped rim (3a) cold-angled from the flanged ring (3) and bearing axially against the supporting ring (4).

23. The wheel bearing unit as claimed in claim 19, which is play-free at least by means of the at least elastically deformed bearing ring (2).

24. The wheel bearing unit as claimed in claim 23, in which the flange (18) has at least one axial passage hole

(18a), a bolt (19) passing axially through the passage hole (18a), and the bearing ring (2) being fixed by means of the bolt (19) axially and in terms of rotation about the axis of rotation (1a).